

## IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICATION TRANSMITTAL LETTER

Assistant Commissioner for Patents  
Washington, D.C. 20231

Transmitted herewith for filing is a patent application for:

Inventor(s): **Thomas David Reid FORD; and Piers Sebastian HARDING**

For: **MAIL LOCATION APPARATUS**

☒ 1 Sheet of Drawings

☒ An Assignment of the invention to Neopost Limited, South Street, Romford, Essex RM1 2AR United Kingdom

☒ An executed Combined Declaration, Petition and Power of Attorney

☐ An executed Small Entity Status Form By Independent Inventor

☐ Priority Document claiming priority of \_\_\_\_\_

☐ Information Disclosure Statement

☐ Preliminary Amendment

The filing fee has been calculated as shown below:

(Col. 1)		(Col. 2)	Small Entity		Other Than A Small Entity	
For	No. Filed	No. Extra	Rate	Fee	Rate	Fee
Basic Fee				\$345		\$ 690
Total Claims	11=20	* 0	x \$9	\$	x \$18	\$
Indep. Claims	1-3=	* 0	x \$39	\$	x \$78	\$
<input type="checkbox"/> Multiple Dependent Claim Presented			+\$130	\$	+\$260	\$
*If the difference in Col. 1 is less than			Total	\$	Total	\$690

zero, enter "0" in Col. 2.

A check in the amount of \$ 730.00 to cover the filing fee and Assignment recordation fee, if appropriate, is enclosed.

☒ The Commissioner is hereby authorized to charge any fees which may be required, or credit any overpayment, to Deposit Account No. 19-2110. A duplicate copy of this sheet is attached.

Respectfully submitted,

*Charles W. Fallow*

Charles W. Fallow  
Reg. No. 28,946

SHOEMAKER AND MATTARE, LTD.  
2001 Jefferson Davis Highway  
Crystal Plaza Building 1 - Suite 1203  
Arlington, Virginia 22202  
(703) 415-0810

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TITLE OF THE INVENTIONMAIL LOCATION APPARATUSBACKGROUND OF THE INVENTION

5 This invention relates to the detection of mail and in particular to detection that a mail item is correctly positioned to receive a postage imprint.

10 Postal authorities require that postal indicia are printed in a specified position in the upper right hand corner of mail items. Accordingly, in printing devices for printing postal indicia on mail items, it is necessary that the mail item be correctly positioned relative to a print head to ensure that the postal indicia is printed in the specified position on the mail item. In postage meter  
15 printing devices in which the mail item is fed along a feed bed by a mail transport mechanism, the mail item is inserted with an upper edge thereof in engagement with a guide and the transport mechanism then feeds the mail item while maintaining the upper edge of the item in engagement  
20 with the guide. When a leading edge of the mail item is sensed by a sensor, printing of the postal indicia is initiated. The position of the guide relative to the print head determines the spacing of the printed indicium from the upper edge of the mail item and the position of  
25 the sensor determines the spacing of the indicium from the leading right hand edge of the mail item. Thus it will be appreciated that the sensor is required only to detect movement of the mail in one direction, namely the direction in which the mail item is fed by the transport  
30 mechanism.

In postage metering apparatus intended to handle a smaller number of mail items, the mail item transport mechanism is dispensed with and the mail item is inserted into the  
35 apparatus and must be correctly positioned manually. Accordingly it is necessary to provide mail detection means capable of ensuring that the mail is correctly

positioned in mutually perpendicular directions prior to initiation of printing of the postal indicium.

#### SUMMARY OF THE INVENTION

5 According to the invention a mail location apparatus operative to locate a mail item at a predetermined location in first and second mutually perpendicular directions includes a first guide for engagement by a first edge of a mail item; a second guide for engagement  
10 by a second edge of the mail item; said second edge being adjacent to and adjoining said first edge at a corner of the mail item; sensor means including a face engageable by said corner of the mail item; said face being inclined to both said first and second directions; said sensor means  
15 being operated in response to the mail item being located in said predetermined location.

#### BRIEF DESCRIPTION OF THE DRAWING

An embodiment of the invention will now be described by way of example with reference to the drawings in which:-  
20 Figure 1 is sectional view of a mail receptor and sensor of a postage meter on a line 1 - 1 of Figure 2,  
Figure 2 is a section on the line 2 - 2 of Figure 1, and  
Figure 3 illustrates a mail item and a print field  
25 thereon.

#### DESCRIPTION OF THE PREFERRED EMBODIMENT

Referring to the drawings, a mail receptor includes an upper wall 10 from which a rear wall 11 and a side wall 12 extend. A mail support platform 13 extends below the  
30 upper wall 10 and is movable between open and closed positions. In the open position as shown in Figure 2 the platform is in a lowermost position spaced from the upper wall 10 to permit the entry into the mail receptor of a  
35 mail item to receive an imprint and to permit the removal of the mail item from the mail receptor after receiving the imprint. In the closed position, the platform is

urged toward the upper wall 10 so that a mail item in the receptor is pressed by the platform against the upper wall 10 and clamped between the platform and the upper wall. Preferably the platform is urged toward the closed  
 5 position by compression springs and is moved to the open position by a mechanism operated by the postage meter.

The upper wall 10 has an aperture 14 therein so that, when a mail item is correctly positioned in the mail receptor,  
 10 a print field 15 of a mail item 16, see Figure 3, is aligned with the aperture and hence is exposed for receiving an imprint from an ink jet print head, indicated at 30. During printing of the imprint, the mail item is held by being clamped between the platform 13 and  
 15 the upper wall 10 and hence the surface of the mail item to receive the imprint is located in a plane determined by the wall 10. The print head is traversed in the direction of arrow 31 across the aperture to print a required postal indicium imprint in the print field of the mail item.

20 When a mail item is inserted into the mail receptor, an upper edge 17 of the mail item lies adjacent the rear wall 11 and a right edge 18 of the mail item lies adjacent the side wall 12.

25 Postal authorities specify the location of the print field 15 in which a postal indicium is to be printed on a mail item. The location of the postal indicium is specified as a distance 19 from the upper edge 17 and a  
 30 distance 20 from the right hand edge 18. Accordingly the rear wall 11 is located relative to the traverse of the print head such that when the upper wall 17 of the mail item is located in engagement with the rear wall 11, the print head prints the indicium with the required spacing  
 35 19 from the upper edge of mail item. The operation of the print head during its traverse of the aperture 14 is timed such that with the right hand edge 18 of the mail item

located in engagement with the side wall 12, the print head prints the indicium with the required spacing 20 from the right hand edge 18 of the mail item.

- 5 An ink jet printer mechanism including a mechanism for moving a mail support platform is described in co-pending application filed on the same date as the present application and entitled INK JET PRINTER MECHANISM.
- 10 In order that the postal indicium is printed in the specified print field of the mail item, it is necessary to ensure during the printing of the indicium the mail item that the mail item is correctly located in the receptor with the upper edge 17 in engagement with the rear wall
- 15 and with the right hand edge 18 in engagement with the side wall 12. This required location of the mail item in the receptor can be determined by detecting that a corner 21 of the mail item at the intersection of the upper edge 17 and the right edge 18 is located at an imaginary
- 20 intersection between the rear wall 11 and the side wall 12 of the receptor.

The rear wall 11 and the side wall 12 do not extend as far as the imaginary intersection therebetween and a mail

25 sensor indicated generally by the reference numeral 22 is located adjacent this imaginary intersection. The sensor includes an element 23 having a face 24 inclined to both the rear wall 11 and the side wall 12. A corner portion of the upper wall 10 and of the platform 13 is omitted and

30 the element extends at least to beyond the upper wall 10 and to at least beyond the mail engaging surface of the support platform 13 when in the open position. The element 23 is mounted on a lever 25 pivoted at 26 and is resiliently urged by a spring 29 into the position of the

35 element 23 shown in Figure 1. A shutter 27 secured relative to the element 23 extends into operative relationship with an electro-optic device 28. With the

element 23 resiliently urged into the position shown in  
 Figure 1, the face 24 thereof extends across a corner of  
 the mail receptor and the shutter is in a withdrawn  
 position relative to the electro-optic device 28. When a  
 5 mail item is inserted into the mail receptor to an extent  
 such that the upper edge 17 is located in engagement with  
 the rear wall 11 and the right hand edge 18 is located in  
 engagement with the sidewall 12, the corner 21 engages the  
 10 face 24 of the element 23 and displaces the element  
 against the force of spring 29 and hence the shutter  
 enters the electro-optic device and interrupts a radiation  
 path between an emitter and a photocell to thereby  
 15 produced an electrical sensing output signal. The output  
 signal is then utilised to initiate movement of the  
 platform to clamp the mail item in the required correct  
 position and after clamping of the mail item the printing  
 operation is initiated to print the postal indicium on the  
 mail item.

20 It will be appreciated that mail items may have a range of  
 dimensions and the hence the mail receptor is open for  
 receipt of mail either from a front of the receptor  
 opposite the rear wall or from a side of the receptor  
 opposed to the side wall 12 and when the upper right hand  
 25 part of the mail item containing the print field 15 is  
 located in the receptor, a remainder of the mail item  
 extends away from the walls 11 and 12 beyond the extent of  
 the upper wall and platform. Accordingly when a mail item  
 is inserted manually into the receptor, the item may be  
 30 moved in a first direction aligned with the side wall 12,  
 in a second direction aligned with the rear wall 11 or in  
 a direction intermediate the first and second directions.

35 The rear wall 10 and the side wall 12 act as guides for  
 the mail items during manual entry of the mail item into  
 the mail receptor. The walls also define locations at  
 which the upper and right hand edges of the mail item must

located for the mail item to be correctly positioned for receipt of the postal indicium imprint. Furthermore it will be appreciated that regardless of the direction of entry of the mail item, the sensor will be operated by engagement of the corner 21 of the mail item only when the mail item is correctly located with the edges 17, 18 thereof in engagement with the walls 11 and 12 respectively. Furthermore because the face 24 is inclined to both the rear wall 11 and to the side wall 12 movement of the mail item to the required correct position in the first direction aligned with the rear wall, in the second direction aligned with the side wall or in any direction intermediate the first and second directions will result in operation of the sensor 22. It is preferred that the face 24 is inclined at approximately the same angle to both the rear and side walls and hence that the face is inclined to the walls at an angle of approximately  $45^{\circ}$ .

If the element 23 only extended as far as the upper wall 10 there is a possibility that very thin mail items may enter a gap between the element and the wall and become jammed. Accordingly, as described hereinbefore the face 24 of the sensor element 23 extends beyond the wall 10 and beyond the surface of the platform when in its open position to prevent the occurrence of such a jam.

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I/We Claim

1. Mail location apparatus operative to locate a mail item at a predetermined location in first and second mutually perpendicular directions including a first guide  
 5 for engagement by a first edge of a mail item; a second guide for engagement by a second edge of the mail item; said second edge being adjacent to and adjoining said first edge at a corner of the mail item; sensor means including a face engageable by said corner of the mail  
 10 item; said face being inclined to both said first and second directions; said sensor means being operated in response to the mail item being located in said predetermined location with said first edge engaging said first guide and said second edge engaging said second  
 15 guide.

2. Mail location apparatus as claimed in claim 1 wherein the first guide comprises a first guide wall extending lengthwise in said second direction and the  
 20 second guide comprises a second guide wall extending lengthwise in the first direction; said first and second guide walls defining the predetermined location for the mail item.

25 3. Mail location apparatus as claimed in claim 2 wherein adjacent ends of the first and second guide walls are spaced apart and the face of the sensor means normally is located to extend between the adjacent ends of the first and second guide walls across a corner of the  
 30 predetermined mail location.

4. Mail location apparatus as claimed in claim 3 wherein the sensor is responsive to displacement of the face out of the predetermined location for the mail item.



5. Mail location apparatus as claimed in claim 3 wherein the face of the sensor is on an element displaceable in a direction inclined to both the first guide wall and the second guide wall by insertion of a mail item into the predetermined location.

6. Mail location apparatus as claimed in claim 5 wherein the element is mounted on a pivot.

7. Mail location apparatus as claimed in claim 5 including resilient means operative to urge the element to a location in which the face thereof extends across the corner of the predetermined mail location.

8. Mail location apparatus as claimed in claim 5 wherein the sensor means includes a detector responsive to displacement of the element to a position in which the face of the element does not extend across the corner of the predetermined mail location.

9. Mail location apparatus as claimed in claim 1 wherein the mail item is located in the predetermined location between a support platform and a reference wall and wherein the face of the sensor extends at least beyond the support platform and the reference wall.

10. Mail location apparatus as claimed in claim 9 wherein the first and second guide walls extend respectively from the reference wall; the support platform is displaceable from an open position in which mail can be inserted into the predetermined location between the reference wall and the support platform to a closed position in which the mail item located in the predetermined position is held by the reference wall and the support platform.

11. Mail location apparatus as claimed in claim 10 in combination with a print head wherein the reference wall has an aperture therein and said print head is selectively operable to print a postal indicium through said aperture  
5 of the reference wall onto the mail item located in the predetermined position.

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ABSTRACT OF THE DISCLOSURE

Mail location apparatus for a postal meter is disclosed in which a required location of a mail piece to receive a postal indicium imprint is defined by guide walls which  
5 are engaged by adjacent edges of the mail piece when the mail piece is in the required location. A sensor is provided to provide an indication when the mail piece is in the required location. The sensor includes a sensor element having a face inclined to both guide walls. When  
10 a mail piece is inserted, a corner of the mail piece engages the face of the sensor element and displaces the sensor element to output an electrical signal when the mail piece is in the required location with the edges thereof engaging the  
15 guide walls.

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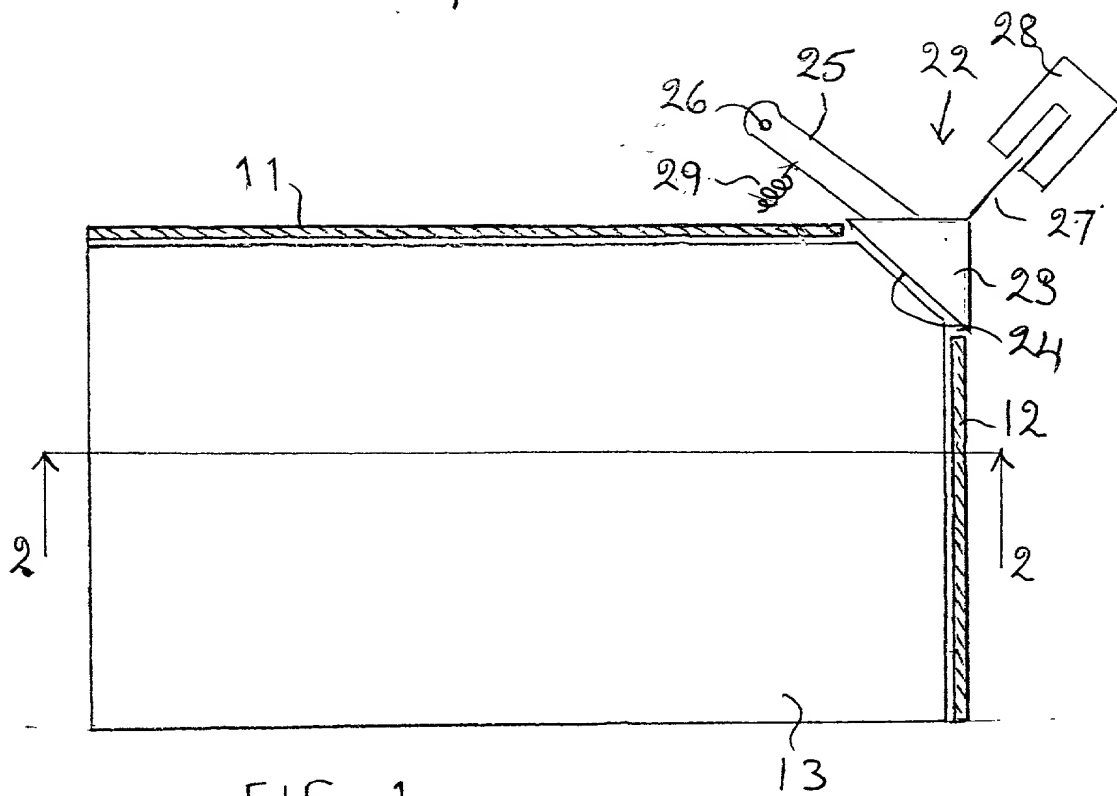


FIG. 1

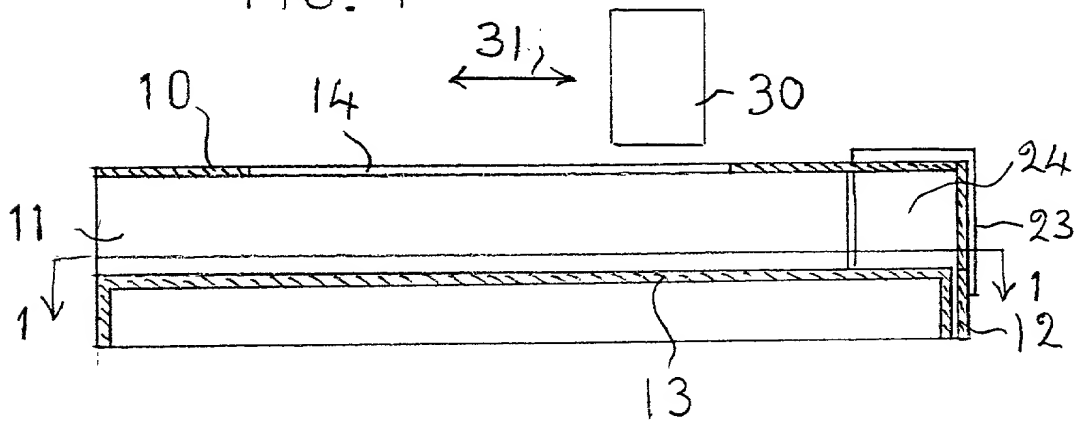


FIG 2

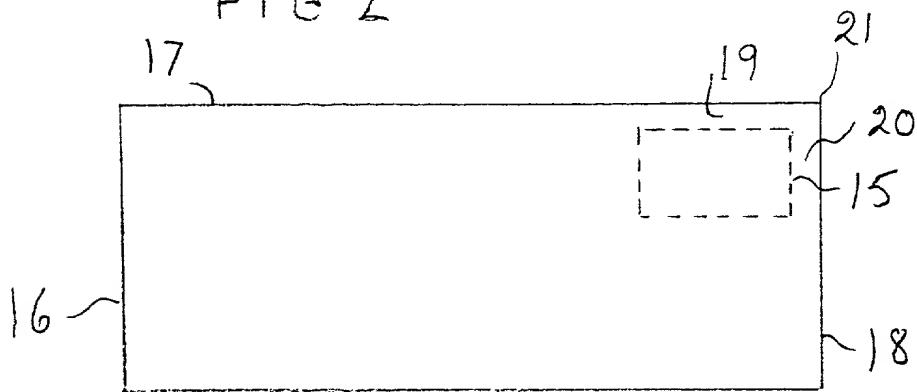


FIG 3

DECLARATION AND POWER OF ATTORNEY

As a below named inventor, I hereby declare: my residence, post office address and citizenship are as stated below next to my name. I believe I am the original, first and sole inventor (if only one name is listed below) or an original, first and joint inventor (if plural names are listed below) of the subject matter which is claimed and for which a patent is sought on the invention entitled MAIL LOCATION APPARATUS the specification of which is attached hereto, which I solicit a United States Patent.

I hereby state that I have reviewed and understand the contents of the above identified specification, including the claims, as amended by any amendment referred to above, and acknowledge a duty to disclose information which is material to the examination of this application under 37 CFR 1.56(a). I do not know and do not believe that the same was ever known or used in the United States before my or our invention thereof or patented or described in any printed publication in any country before my or our invention thereof more than one year prior to this application or said international application, that the same was not in public use or on sale in the United States of America more than one year prior to this application or said international application, that the invention has not been patented or made the subject of an inventor's certificate issued before the date of this application or said international application in any country foreign to the United States of America on an application filed by me or my legal representatives or assigns more than twelve months prior to this application or said international application and that no application for patent or inventor's certificate on this invention has been filed in any country foreign to the United States of America prior to this application or said international application by me or my legal representatives or assigns except as identified below. I hereby claim priority benefits under 35 U.S.C. 119 based on any foreign application(s) for patent or inventor's certificate listed below and have also identified below any foreign application for patent or inventor's certificate on the present invention, filed before the application(s) on which priority is claimed.

FOREIGN APPLICATION(S), IF ANY, REFERRED TO ABOVE

<u>COUNTRY</u>	<u>APPLICATION NUMBER</u>	<u>DAY, MONTH, YEAR FILED</u>	<u>PRIORITY CLAIMED</u>
GB	9902062.0	29 January 1999	Yes

I hereby claim benefit under 35 U.S.C.120 of any U.S. application(s) listed below. If the subject matter of any claim(s) of this application is not disclosed in the prior U.S. application(s) as required by paragraph one of 35 U.S.C. 112, I acknowledge a duty to disclose material information as defined in 37 CFR 1.56(a) regarding occurrences between the filing date of the prior application(s) and the national or PCT international filing date of this application:

<u>APPLICATION SERIAL NUMBER</u>	<u>DAY, MONTH &amp; YEAR FILED</u>	<u>STATUS</u>
None		

POWER OF ATTORNEY

Applicant hereby appoints Allen P. Rosenberg Reg. No. 24946, Charles W. Fallow, Reg. No. 28946, Paul V. Del Giudice, Reg. No. 28788 and Jerry W. Berkstresser, Reg. No. 22651, attorneys with full power of substitution and revocation, to prosecute this application and to transact all business in the Patent and Trademark Office connected therewith.

APPOINTMENT OF DOMESTIC REPRESENTATIVE

Address all communications to SHOEMAKER AND MATTARE, LTD., Suite 1203 Crystal Plaza Building 1, 2001 Jefferson Davis Highway, Arlington, Virginia 22202. (703-415-0810).

All statements made herein of my own knowledge are true. All statements made on information and belief are believed to be true. These statements were made with the knowledge that wilful false statements and the like so made are punishable by fine, imprisonment, or both, under 18 U.S.C. 1001 and may jeopardise the validity of the application or any patent issuing thereon.

Note: Please sign one full given name and your surname, using initials where appropriate for other names. It is important that the name be consistent throughout the application papers. Signing of an application more than five weeks prior to filing or an undated application is not acceptable to the Patent and Trademark Office except for receiving an initial filing date.

1. Full name of inventor: THOMAS DAVID REID FORD

Inventor's signature: Thomas Ford  
Date: 25 January 2000  
Residence: Royston, Hertfordshire, United Kingdom  
Citizenship: Canadian  
Post Office Address: 37 Morton Street,  
Royston,  
Hertfordshire SG8 7AZ  
United Kingdom.

2. Full name of inventor: PIERS HARDING

Inventor's signature: Piers Harding  
Date: 25 January 2000  
Residence: Alconbury Weston, Cambridgeshire, United Kingdom  
Citizenship: British  
Post Office Address: 4 Wheatsheaf Road,  
Alconbury Weston, Huntingdon,  
Cambridgeshire PE17 5LP  
United Kingdom.